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## Four new Species of Grasses from Washington

BY C. V. PIPER

### *Elymus curvatus*

Culms erect, often geniculate at base, about one meter high, glabrous; nodes glabrous: culm-leaves four or five; sheaths glabrous, the upper exceeding the internodes, the lower ones usually shorter; ligule none; blades flat, 15–20 cm. long, 5–7 mm. wide, scabrous on both sides, especially beneath: spikes stout, erect, barely exserted from the uppermost sheaths, 10–12 cm. long, green: empty glumes lanceolate, rigid, thick, 3–5-nerved, scabrous on the margins and on the nerves above the middle, acuminate, 13–17 mm. long, often curved or twisted, shining: spikelets 2–4-flowered, mostly 3-flowered: flowering glumes pale, 3–5-nerved near the apex, sparsely hispidulous above the middle, oblong-lanceolate, acuminate, 8–10 mm. long, tipped with a straight awn 1–2 mm. long: palea hardly equalling the flowering glume, scabrous-ciliate: internodes of the rachis 4–7 mm. long, scabrous on the nerves, apex and margins.

A peculiar species not closely related to any other known to me. Collected by Mr. Frank O. Kreager, no. 375, in Box Cañon, Pend Oreille River, Stevens County, Washington, Aug. 2, 1902.

### *Sitanion velutinum*

Culms tufted, erect, rigid, densely puberulent, 30–40 cm. high: innovations few, short: sheaths exceeding the internodes, rather closely fitting, open in the throat, densely and minutely velutinous; blades flat, lanceolate, gradually attenuate from base to apex, acute, erect or divergent, densely puberulent on both sides; culm-leaves three or four, the lower 6–10 cm., the upper 2–4 cm. long; ligule obsolete: spikes well exserted, stiffly erect, 4–8 cm. long without the awns: spikelets two at each node or rarely one, the lower 1–2-flowered and frequently sterile, the upper 2–4-flowered, one to three of the florets fertile: empty glumes subulate, puberulent, 5–7 mm. long, mostly entire, but one or two often cleft and bearing a short lateral awn or rarely cleft to the base, each tipped with a scabrous spreading awn 3–5.5 cm. long: flowering glumes lanceolate, puberulent, 9–11 mm. long, 3-nerved above, trifid, the lateral lobes 1 mm. long, the stout awns 3–5.5 cm. long: palea as long as the flowering glume, acute, scabrous on the nerves:

internodes of the rachis linear-clavate, 4–6 mm. long, puberulent near the apex, minutely scabrous on the margin above.

Steptoe, Whitman County, Washington, collected by G. R. Vasey, July 5, 1901.

#### **Sitanion basalticola**

Densely tufted, the whole plant smooth and glaucous: culms 10–20 cm. high, barely exceeding the leaves of the numerous innovations: sheaths exceeding the internodes; ligule obsolete; blades involute, erect or recurved, 3–10 cm. long, 2 mm. wide, smooth beneath, minutely scabrous on the nerves above: spikes 3–5 cm. long, without the awns, erect, barely exserted from the upper sheaths: spikelets two at each joint, the lower with one sterile floret, the upper with three florets, two of them usually fertile: empty glumes or divisions mostly six or eight, subulate, entire, scabrous, about 6 mm. long, each tipped with a spreading awn, 2–3.5 cm. long: flowering glume 8–10 mm. long, glabrous and glaucous, excepting the three nerves at apex, these scabrous, the lateral ones prolonged into bristles 1 mm. long, the middle one into a stout scabrous divergent awn, 3–3.5 cm. long: palea as long as the flowering glume, minutely scabrous on the margin above the middle, emarginate at apex: internodes of the rachis flattened, linear or linear-spatulate, scabrous on the margins above.

In basaltic soil, Coulee City, Washington, collected by the writer, June 1, 1902, no 3924.

#### **Sitanion rubescens**

Culms tufted, erect, somewhat geniculate at the lower nodes, glabrous, about 60 cm. high; nodes brown: sheaths mostly shorter than the internodes, rather closely fitting, glabrous; ligules obsolete or nearly so; blades flat, green, linear, attenuate to the acute apex, 5–10 cm. long, 3–5 mm. broad, glabrous above, scabrous on the nerves beneath, where the latter are more prominent than above: spikes long-exserted, straight or flexuous, erect, 8–13 cm. long: spikelets mostly two, rarely three, at each joint, the lower or lateral ones 1–2-flowered, mostly sterile, the upper or middle ones 2–3-flowered, the lower one or two florets fertile: empty glumes lanceolate, frequently oblique, 2–3-nerved, scabrous on the nerves, 6–7 mm. long, each bearing a stout divergent scabrous awn, 1–2 cm. long, or the glumes very rarely bifid and bearing in addition a short lateral awn: flowering glumes lanceolate, 10–12 mm. long, smooth and shining below, 3–5-nerved and scabrous above, each bearing a stout straight or flexuous scabrid purplish awn, 1.5–5 cm. long: palea as long as the flowering glume,

truncate, scabrous on the nerves above : internodes of the rachis spatulate, flattened, scabrous on the margins, 6–8 mm. long.

Dry rocky places, 2300 m. altitude, Mount Rainier, Washington, collected by the writer, in August, 1895, no. 1954. This species is nearest allied to *S. lanceolatum* J. G. Smith.

PULLMAN, WASHINGTON.